

CLAIMS

We claim:

1. A method of determining a location of a mobile terminal, comprising:  
receiving, at the mobile terminal, respective signals from respective ones of at  
least three transmitters whose respective locations and respective transmit power  
levels are known, the respective locations of the at least three transmitters being  
5 different from each other;  
measuring respective strengths of the received signals; and  
determining the location of the mobile terminal based on the respective  
strengths of the received signals, the respective locations of the at least three  
transmitters, and the respective transmit power levels of the at least three transmitters.
- 10 2. The method of Claim 1, wherein determining the location of the  
mobile terminal based on the respective strengths of the received signals, the  
respective locations of the at least three transmitters, and the respective transmit  
power levels of the at least three transmitters comprises:  
15 transmitting the respective strengths of the received signals to a data  
processing system, the data processing system being programmed with the respective  
locations of the at least three transmitters, and being further programmed with the  
respective transmit power levels of the at least three transmitters; and  
determining, at the data processing system, the location of the mobile terminal  
20 based on the respective strengths of the received signals, the respective locations of  
the at least three transmitters, and the respective transmit power levels of the at least  
three transmitters.
- 25 3. The method of Claim 1, wherein determining the location of the  
mobile terminal based on the respective strengths of the received signals, the  
respective locations of the at least three transmitters, and the respective transmit  
power levels of the at least three transmitters comprises:  
receiving, at the mobile terminal, the respective locations of the at least three  
transmitters from the at least three transmitters;

receiving, at the mobile terminal, the respective transmit power levels of the at least three transmitters from the at least three transmitters; and

determining, at the mobile terminal, the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters.

4. The method of Claim 1, wherein the respective ones of the at least three transmitters comprise respective ones of a plurality of mobile data base stations, and wherein the received signals are cellular digital packet data (CDPD) signals.

5. The method of Claim 4, wherein respective ones of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein the one of the at least three cells is adjacent to other ones of the at least three cells.

6. The method of Claim 4, wherein respective ones of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein receiving, at the mobile terminal, the respective signals from the respective ones of the at least three transmitters whose respective locations and respective transmit power levels are known comprises:

scanning respective CDPD channels that are associated with respective other ones of the at least three cells, which are adjacent to the one of the at least three cells.

7. The method of Claim 4, wherein respective ones of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein other ones of the at least three cells comprise at least one cell that is adjacent to the one of the at least three cells and at least one cell that is not adjacent to the one of the at least three cells.

8. The method of Claim 4, wherein respective ones of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein receiving, at the mobile terminal, the respective signals from the respective ones of the at least three transmitters whose respective locations and respective transmit power levels are known comprises:

scanning respective CDPD channels that are associated with respective other ones of the at least three cells, which comprise at least one cell that is adjacent to the one of the at least three cells and at least one cell that is not adjacent to the one of the at least three cells.

9. A system for determining a location of a mobile terminal, comprising:  
means for receiving, at the mobile terminal, respective signals from respective ones of at least three transmitters whose respective locations and respective transmit power levels are known, the respective locations of the at least three transmitters being different from each other;

means for measuring respective strengths of the received signals; and  
means for determining the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters.

10. The system of Claim 9, wherein the means for determining the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters comprises:

a data processing system programmed with the respective locations of the at least three transmitters, and being further programmed with the respective transmit power levels of the at least three transmitters;

means for transmitting the respective strengths of the received signals to the data processing system; and

means for determining, at the data processing system, the location of the mobile terminal based on the respective strengths of the received signals, the

respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters.

11. The system of Claim 9, wherein determining the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters comprises:

means for receiving, at the mobile terminal, the respective locations of the at least three transmitters from the at least three transmitters;

means for receiving, at the mobile terminal, the respective transmit power levels of the at least three transmitters from the at least three transmitters; and

means for determining, at the mobile terminal, the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters.

12. The system of Claim 9, wherein the respective ones of the at least three transmitters comprise respective ones of a plurality of mobile data base stations, and wherein the received signals are cellular digital packet data (CDPD) signals.

13. The system of Claim 12, wherein respective ones of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein the one of the at least three cells is adjacent to other ones of the at least three cells.

14. The system of Claim 12, wherein respective ones of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein the means for receiving, at the mobile terminal, the respective signals from the respective ones of the at least three transmitters whose respective locations and respective transmit power levels are known comprises:

means for scanning respective CDPD channels that are associated with respective other ones of the at least three cells, which are adjacent to the one of the at least three cells.

5           15.    The system of Claim 12, wherein respective ones of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein other ones of the at least three cells comprise at least one cell that is adjacent to the one of the at least three cells and at least one cell that is not adjacent to the one of the at least three  
10   cells.

          16.    The system of Claim 12, wherein respective ones of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein the means for  
15   receiving, at the mobile terminal, the respective signals from the respective ones of the at least three transmitters whose respective locations and respective transmit power levels are known comprises:

          means for scanning respective CDPD channels that are associated with  
20   respective other ones of the at least three cells, which comprise at least one cell that is adjacent to the one of the at least three cells and at least one cell that is not adjacent to the one of the at least three cells.

          17.    A computer program product for determining a location of a mobile terminal, comprising:  
25   a computer readable storage medium having computer readable program code embodied therein, the computer readable program code comprising:  
          computer readable program code for receiving, at the mobile terminal, respective signals from respective ones of at least three transmitters whose respective locations and respective transmit power levels are known, the respective locations of  
30   the at least three transmitters being different from each other;  
          computer readable program code for measuring respective strengths of the received signals; and

computer readable program code for determining the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters.

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18. The computer program product of Claim 17, wherein the computer readable program code for determining the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters comprises:

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a data processing system programmed with the respective locations of the at least three transmitters, and being further programmed with the respective transmit power levels of the at least three transmitters;

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computer readable program code for transmitting the respective strengths of the received signals to the data processing system; and

computer readable program code for determining, at the data processing system, the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters.

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19. The computer program product of Claim 17, wherein determining the location of the mobile terminal based on the respective strengths of the received signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters comprises:

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computer readable program code for receiving, at the mobile terminal, the respective locations of the at least three transmitters from the at least three transmitters;

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computer readable program code for receiving, at the mobile terminal, the respective transmit power levels of the at least three transmitters from the at least three transmitters; and

computer readable program code for determining, at the mobile terminal, the location of the mobile terminal based on the respective strengths of the received

signals, the respective locations of the at least three transmitters, and the respective transmit power levels of the at least three transmitters.

20. The computer program product of Claim 17, wherein the respective  
5 ones of the at least three transmitters comprise respective ones of a plurality of mobile data base stations, and wherein the received signals are cellular digital packet data (CDPD) signals.

21. The computer program product of Claim 20, wherein respective ones  
10 of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein the one of the at least three cells is adjacent to other ones of the at least three cells.

22. The computer program product of Claim 20, wherein respective ones  
15 of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein the computer readable program code for receiving, at the mobile terminal, the respective signals from the respective ones of the at least three transmitters whose  
20 respective locations and respective transmit power levels are known comprises:

computer readable program code for scanning respective CDPD channels that are associated with respective other ones of the at least three cells, which are adjacent to the one of the at least three cells.

23. The computer program product of Claim 20, wherein respective ones  
25 of the at least three transmitters are associated with respective ones of at least three cells, wherein the mobile terminal is located in one of the at least three cells, and wherein other ones of the at least three cells comprise at least one cell that is adjacent to the one of the at least three cells and at least one cell that is not adjacent to the one  
30 of the at least three cells.

24. The computer program product of Claim 20, wherein respective ones  
of the at least three transmitters are associated with respective ones of at least three

cells, wherein the mobile terminal is located in one of the at least three cells, and wherein the computer readable program code for receiving, at the mobile terminal, the respective signals from the respective ones of the at least three transmitters whose respective locations and respective transmit power levels are known comprises:

- 5        computer readable program code for scanning respective CDPD channels that are associated with respective other ones of the at least three cells, which comprise at least one cell that is adjacent to the one of the at least three cells and at least one cell that is not adjacent to the one of the at least three cells.